Part No. 312749-B Rev 00
October 2001

4401 Great America Parkway
Santa Clara, CA 95054

Installing Passport 8600 Switch Modules

NORTEL NETWORKS™

Copyright © 2001 Nortel Networks

All rights reserved. October 2001.

The information in this document is subject to change without notice. The statements, configurations, technical data, and recommendations in this document are believed to be accurate and reliable, but are presented without express or implied warranty. Users must take full responsibility for their applications of any products specified in this document. The information in this document is proprietary to Nortel Networks Inc.

Trademarks

Nortel Networks, the Nortel Networks logo, the Globemark, Unified Networks, and Passport are trademarks of Nortel Networks.

3Com is a trademark of 3Com Corporation.

Adobe and Acrobat Reader are trademarks of Adobe Systems Incorporated.

Intel is a trademark of Intel Corporation.

SanDisk is a trademark of SanDisk Corporation.

Statement of conditions

In the interest of improving internal design, operational function, and/or reliability, Nortel Networks Inc. reserves the right to make changes to the products described in this document without notice.

Nortel Networks Inc. does not assume any liability that may occur due to the use or application of the product(s) or circuit layout(s) described herein.

USA requirements only

Federal Communications Commission (FCC) Compliance Notice: Radio Frequency Notice

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy. If it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to take whatever measures may be necessary to correct the interference at their own expense.

European requirements only

EN 55 022 statement

This is to certify that the Nortel Networks Passport 8000 Series switch is shielded against the generation of radio interference in accordance with the application of Council Directive 89/336/EEC, Article 4a. Conformity is declared by the application of EN 55 022 Class A (CISPR 22).

Warning: This is a Class A product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take appropriate measures.

Achtung: Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmaßnahmen verantwortlich ist.

Attention: Ceci est un produit de Classe A. Dans un environnement domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l’utilisateur de prendre les mesures spécifiques appropriées.

EC Declaration of Conformity

This product conforms to the provisions of the R&TTE Directive 1999/5/EC.

Japan/Nippon requirements only

Voluntary Control Council for Interference (VCCI) statement

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Taiwan requirements

Bureau of Standards, Metrology and Inspection (BSMI) Statement

警告使用者:

這是甲類的資訊產品, 在居住的環境中使用時, 可能會造成射頻干擾, 在這種情況下, 使用者會被要求採取某些適當的對策.

Canada requirements only

Canadian Department of Communications Radio Interference Regulations

This digital apparatus (Passport 8000 Series switch) does not exceed the Class A limits for radio-noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Règlement sur le brouillage radioélectrique du ministère des Communications

Cet appareil numérique (Passport 8000 Series switch) respecte les limites de bruits radioélectriques visant les appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique du ministère des Communications du Canada.

Nortel Networks Inc. software license agreement

This Software License Agreement (“License Agreement”) is between you, the end-user (“Customer”) and Nortel Networks Corporation and its subsidiaries and affiliates (“Nortel Networks”). PLEASE READ THE FOLLOWING CAREFULLY. YOU MUST ACCEPT THESE LICENSE TERMS IN ORDER TO DOWNLOAD AND/OR USE THE SOFTWARE. USE OF THE SOFTWARE CONSTITUTES YOUR ACCEPTANCE OF THIS LICENSE AGREEMENT. If you do not accept these terms and conditions, return the Software, unused and in the original shipping container, within 30 days of purchase to obtain a credit for the full purchase price.

“Software” is owned or licensed by Nortel Networks, its parent or one of its subsidiaries or affiliates, and is copyrighted and licensed, not sold. Software consists of machine-readable instructions, its components, data, audio-visual content (such as images, text, recordings or pictures) and related licensed materials including all whole or partial copies. Nortel Networks grants you a license to use the Software only in the country where you acquired the Software. You obtain no rights other than those granted to you under this License Agreement. You are responsible for the selection of the Software and for the installation of, use of, and results obtained from the Software.

1. Licensed Use of Software. Nortel Networks grants Customer a nonexclusive license to use a copy of the Software on only one machine at any one time or to the extent of the activation or authorized usage level, whichever is applicable. To the extent Software is furnished for use with designated hardware or Customer furnished equipment (“CFE”), Customer is granted a nonexclusive license to use Software only on such hardware or CFE, as applicable. Software contains trade secrets and Customer agrees to treat Software as confidential information using the same care and discretion Customer uses with its own similar information that it does not wish to disclose, publish or disseminate. Customer will ensure that anyone who uses the Software does so only in compliance with the terms of this Agreement. Customer shall not a) use, copy, modify, transfer or distribute the Software except as expressly authorized; b) reverse assemble, reverse compile, reverse engineer or otherwise translate the Software; c) create derivative works or modifications unless expressly authorized; or d) sublicense, rent or lease the Software. Licensors of intellectual property to Nortel Networks are beneficiaries of this provision. Upon termination or breach of the license by Customer or in the event designated hardware or CFE is no longer in use, Customer will promptly return the Software to Nortel Networks or certify its destruction. Nortel Networks may audit by remote polling or other reasonable means to determine Customer’s Software activation or usage levels. If suppliers of third party software included in Software require Nortel Networks to include additional or different terms, Customer agrees to abide by such terms provided by Nortel Networks with respect to such third party software.

2. Warranty. Except as may be otherwise expressly agreed to in writing between Nortel Networks and Customer, Software is provided “AS IS” without any warranties (conditions) of any kind. NORTEL NETWORKS DISCLAIMS ALL WARRANTIES (CONDITIONS) FOR THE SOFTWARE, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABLITITY AND FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY OF NON-INFRINGEMENT. Nortel Networks is not obligated to provide support of any kind for the Software. Some jurisdictions do not allow exclusion of implied warranties, and, in such event, the above exclusions may not apply.

3. Limitation of Remedies. IN NO EVENT SHALL NORTEL NETWORKS OR ITS AGENTS OR SUPPLIERS BE LIABLE FOR ANY OF THE FOLLOWING: a) DAMAGES BASED ON ANY THIRD PARTY CLAIM; b) LOSS OF, OR DAMAGE TO, CUSTOMER’S RECORDS, FILES OR DATA; OR c) DIRECT, INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS OR SAVINGS), WHETHER IN CONTRACT, TORT OR OTHERWISE (INCLUDING NEGLIGENCE) ARISING OUT OF YOUR USE OF THE SOFTWARE, EVEN IF NORTEL NETWORKS, ITS AGENTS OR SUPPLIERS HAVE BEEN ADVISED OF THEIR POSSIBILITY. The forgoing limitations of remedies also apply to any developer and/or supplier of the Software. Such developer and/or supplier is an intended beneficiary of this Section. Some jurisdictions do not allow these limitations or exclusions and, in such event, they may not apply.

4. General

a) If Customer is the United States Government, the following paragraph shall apply: All Nortel Networks Software available under this License Agreement is commercial computer software and commercial computer software documentation and, in the event Software is licensed for or on behalf of the United States Government, the respective rights to the software and software documentation are governed by Nortel Networks standard commercial license in accordance with U.S. Federal Regulations at 48 C.F.R. Sections 12.212 (for non-DoD entities) and 48 C.F.R. 227.7202 (for DoD entities).

b) Customer may terminate the license at any time. Nortel Networks may terminate the license if Customer fails to comply with the terms and conditions of this license. In either event, upon termination, Customer must either return the Software to Nortel Networks or certify its destruction.

c) Customer is responsible for payment of any taxes, including personal property taxes, resulting from Customer's use of the Software. Customer agrees to comply with all applicable laws including all applicable export and import laws and regulations.

d) Neither party may bring an action, regardless of form, more than two years after the cause of the action arose.

e) The terms and conditions of this License Agreement form the complete and exclusive agreement between Customer and Nortel Networks.

f) This License Agreement is governed by the laws of the country in which Customer acquires the Software. If the Software is acquired in the United States, then this License Agreement is governed by the laws of the state of New York.

Contents

Preface 13

Before you begin 13
Text conventions 13
Related publications 14
How to get help 17

Chapter 1
Passport 8600 modules 19

Passport 8608GBE Module 21
Passport 8608GTE Module 23
Passport 8608SXE Module 24
Passport 8616SXE Module 27
Passport 8624FXE Module 28
Passport 8632TXE Module 31
Passport 8648TXE Module 33
Passport 8672ATME Module 34
Passport 8683POSE Module 35
Passport 8691SF Module 37
- Ethernet management port 40
- DCE/DTE switch 40
- Serial ports 40
- Reset button 41
- PCMCIA card slot 41

Chapter 2
Installing Passport 8600 modules and connecting equipment 43

Removing and installing a filler panel 43
- Removing a filler panel 44

Installing a filler panel 45
Installing and replacing a module 45
Removing a module 46
Installing a module 50
Connecting a PC or terminal to the switch 54
Connecting a modem to the switch 55
Connecting a network management station to the switch 56
Connecting communications cables to Passport 8600 modules 57

Appendix A
Passport 8600 module technical specifications 59

General specifications 60
Passport 8608GBE Module 62
GBICs 63
1000BASE-SX GBIC 63
1000BASE-LX GBIC 63
1000BASE-XD GBIC 64
1000BASE-ZX GBIC 64
Passport 8608GTE Module 65
Port connectors 66
Passport 8608SXE Module 67
Passport 8616SXE Module 68
Passport 8624FXE Module 69
Passport 8632TXE Module 70
Passport 8648TXE Module 71
Port connectors 71
Passport 8672ATME Module 72
Passport 8683POSE Module 73
Passport 8691SF Module 74
Management port 75
Console serial port 75
Modem serial port 76

Figures

Figure 1 Passport 8608GBE Module 21
Figure 2 Passport 8608GBE Module LEDs 22
Figure 3 Passport 8608GTE Module 23
Figure 4 Passport 8608GTE Module LEDs 23
Figure 5 Passport 8608SXE Module 24
Figure 6 Passport 8608SXE Module LEDs 25
Figure 7 Passport 8616SXE Module 27
Figure 8 Passport 8616SXE Module LEDs 27
Figure 9 Passport 8624FXE Module 28
Figure 10 Passport 8624FXE Module LEDs 29
Figure 11 Passport 8632TXE Module 31
Figure 12 Passport 8632TXE Module LEDs 31
Figure 13 Passport 8648TXE Module 33
Figure 14 Passport 8648TXE Module LEDs 33
Figure 15 Passport 8672ATME Module with an OC-12c MDA 34
Figure 16 Passport 8683POSE Module with an OC-12c MDA 36
Figure 17 Passport 8691SF Module 37
Figure 18 Passport 8691SF Module LEDs 38
Figure 19 Removing a filler panel: Passport 8003, 8006, and 8010 Chassis 44
Figure 20 Removing a filler panel: Passport 8010co Chassis 44
Figure 21 Loosening screws on the module: Passport 8003, 8006, and 8010 Chassis 46
Figure 22 Loosening screws on the module: Passport 8010co Chassis 47
Figure 23 Ejecting the module from the chassis: Passport 8003, 8006, and 8010 Chassis 48
Figure 24 Ejecting the module from the chassis: Passport 8010co Chassis 48
Figure 25 Removing a module: Passport 8003, 8006, and 8010 Chassis 49
Figure 26 Removing a module: Passport 8010co Chassis 49
Figure 27 Installing a module: Passport 8003, 8006, and 8010 Chassis 50

Figure 28 Installing a module: Passport 8010co Chassis 51
Figure 29 Seating the backplane connectors: Passport 8003, 8006, and 8010 Chassis 51
Figure 30 Seating the backplane connectors: Passport 8010co Chassis 52
Figure 31 Securing the module in the chassis: Passport 8003, 8006, and 8010 Chassis 53
Figure 32 Securing the module in the chassis: Passport 8010co Chassis 53

Tables

Table 1 Maximum port densities for Passport 8600 modules 20
Table 2 Passport 8608GBE Module LEDs 22
Table 3 Passport 8608GTE Module LEDs 24
Table 4 Passport 8608SXE Module LEDs 26
Table 5 Passport 8616SXE Module LEDs 28
Table 6 Passport 8624FXE Module LEDs 30
Table 7 Passport 8632TXE Module LEDs 32
Table 8 Passport 8648TXE Module LEDs 34
Table 9 Passport 8672ATME Module LED 35
Table 10 Passport 8683POSE Module LED 37
Table 11 Passport 8691SF Module LEDs 39
Table 12 PC and terminal parameters 54
Table 13 Modem settings 55
Table 14 Connectors and cables for Passport 8600 modules 57
Table 15 Pin assignments: Passport 8608GTE Module port 66
Table 16 Pin assignments: Passport 8648TXE Module port 71
Table 17 Pin assignments: Passport 8691SF Module Management port 75
Table 18 Pin assignments: Passport 8691SF Module Console port 76
Table 19 Pin assignments: DTE to DCE 76

Preface

The Nortel Networks* Passport* 8000 Series chassis provides the physical enclosure for the Passport 8000 Series switch modules. When Passport 8600 modules are installed in the chassis, the resulting Passport 8600 Switch provides a range of data speeds and high-performance switching and routing features.

This guide provides instructions for installing the Passport 8600 modules in a Passport 8000 Series chassis.

Before you begin

This guide is intended for qualified service personnel who need to install or replace a Passport 8600 module in the chassis. A qualified service person should have appropriate technical training and experience and be aware of the hazards involved in installing and replacing customer-replaceable units.

Text conventions

This guide uses the following text conventions:

italic text	Indicates new terms and book titles.

Related publications

For more information about using a Passport 8000 Series switch, the resident CLI, or Device Manager, refer to the following publications:

- *Release Notes for the Passport 8000 Series Switch Release 3.2* (part number 313198-B Rev 00)

  Provides a list of new features and late-breaking information about the hardware and software that is not included in the Passport 8000 Series switch documentation.

- *Installing and Maintaining the Passport 8003 Chassis and Components* (part number 313074-B Rev 00)

  Provides instructions for installing the Passport 8003 Chassis in an equipment rack and for installing and replacing fan trays, power supplies, modules, gigabit interface converters, and media dependent adapters. This guide describes some of the routine tasks of operating the Passport 8003 Chassis and includes technical specifications for the chassis and the modules.

- *Installing and Maintaining the Passport 8006 Chassis and Components* (part number 312748-B Rev 00)

  Provides instructions for installing the Passport 8006 Chassis in an equipment rack and for installing and replacing fan trays, power supplies, modules, gigabit interface converters, and media dependent adapters. This guide describes some of the routine tasks of operating the Passport 8006 Chassis and includes technical specifications for the chassis and the modules.

- *Installing and Maintaining the Passport 8010 Chassis and Components* (part number 312747-B Rev 00)

  Provides instructions for installing the Passport 8010 Chassis in an equipment rack and for installing and replacing fan trays, power supplies, modules, gigabit interface converters, and media dependent adapters. This guide describes some of the routine tasks of operating the Passport 8010 Chassis and includes technical specifications for the chassis and the modules.

- *Installing and Maintaining the Passport 8010co Chassis and Components* (part number 312746-B Rev 00)

  Provides instructions for installing the Passport 8010co Chassis in an equipment rack and for installing and replacing fan trays, power supplies, modules, gigabit interface converters, and media dependent adapters. This guide describes some of the routine tasks of operating the Passport 8010co Chassis and includes technical specifications for the chassis and the modules.

- *Installing the Breaker Interface Panel for the Passport 8010co Chassis* (part number 312755-B Rev 00)

  Describes how to install the breaker interface panel in an equipment rack, connect cables, and interpret LEDs. It includes technical specifications for the breaker interface panel.

- *Networking Concepts for the Passport 8000 Series Switch* (part number 313196-B Rev 00)

  Provides general information and a description of how a Passport 8000 Series switch handles various networking features, such as VLANs, MultiLink Trunking, OSPF, RIP, and IPX.

- *Network Design Guidelines for the Passport 8000 Series Switch* (part number 313197-B Rev 00)

  Provides guidelines for using the switching and routing features of the Passport 8000 Series hardware and software in your network design. This companion guide to *Networking Concepts for the Passport 8000 Series Switch* incorporates feedback from beta testing of the switch and focuses on optimizing network performance.

- *Getting Started with the Passport 8000 Series Switch Management Software* (part number 313189-B Rev 00)

  Provides instructions for installing the Passport 8000 Series switch management software and describes initial setup procedures.

- *Managing the Passport 8000 Series Switch Using the Command Line Interface Release 3.2* (part number 313194-B Rev 00)

  Describes the command line interface (CLI) structure and the commands used to perform basic switch management operations, such as modifying the switch boot sequence, working with switch files, and setting up security features.

- *Configuring Switching and Routing Operations for the Passport 8000 Series Switch Using the Command Line Interface Release 3.2* (part number 313191-B Rev 00)

  Describes the CLI commands and parameters for configuring layer 2 (switching) and layer 3 (routing) operations.

- *Managing the Passport 8000 Series Switch Using Device Manager Release 5.x.x* (part number 313195-B Rev 00)

  Describes the structure of Device Manager and how to use it to perform basic switch management operations, such as working with switch files and setting up security features.

- *Configuring Switching and Routing Operations for the Passport 8000 Series Switch Using Device Manager Release 5.x.x* (part number 313193-B Rev 00)

  Describes how to use Device Manager to configure and manage layer 2 (switching) and layer 3 (routing) functions.

You can print selected technical manuals and release notes free, directly from the Internet. Go to the www.nortelnetworks.com/documentation URL. Find the product for which you need documentation. Then locate the specific category and model or version for your hardware or software product. Use Adobe* Acrobat Reader* to open the manuals and release notes, search for the sections you need, and print them on most standard printers. Go to Adobe Systems at the www.adobe.com URL to download a free copy of the Adobe Acrobat Reader.

You can purchase selected documentation sets, CDs, and technical publications through the Internet at the www1.fatbrain.com/documentation/nortel/ URL.

How to get help

If you purchased a service contract for your Nortel Networks product from a distributor or authorized reseller, contact the technical support staff for that distributor or reseller for assistance.

If you purchased a Nortel Networks service program, contact one of the following Nortel Networks Technical Solutions Centers:

Technical Solutions Center	Telephone
Europe, Middle East, and Africa	(33) (4) 92-966-968
North America	(800) 4NORTEL or (800) 466-7835
Asia Pacific	(61) (2) 9927-8800
China	(800) 810-5000

Additional information about the Nortel Networks Technical Solutions Centers is available from the www.nortelnetworks.com/help/contact/global URL.

An Express Routing Code (ERC) is available for many Nortel Networks products and services. When you use an ERC, your call is routed to a technical support person who specializes in supporting that product or service. To locate an ERC for your product or service, go to the http://www130.nortelnetworks.com/cgi-bin/eserv/common/essContactUs.jsp URL.

Chapter 1
Passport 8600 modules

The Passport 8600 modules provide a full complement of core routing and switching capabilities in a Passport 8000 Series chassis. The Passport 8600 modules include a switch management module and input/output (I/O) modules. A Passport 8000 Series chassis with installed Passport 8600 modules constitutes a Passport 8600 Switch with distributed management and full redundancy.

The Passport 8600 I/O modules support different types of interfaces with different speeds, and port types including:

- 10/100 megabit per second (Mb/s) autonegotiating twisted pair Ethernet ports
- 100 Mb/s fiber Ethernet ports
- 1000 Mb/s fiber and copper Ethernet ports
- ATM OC-3c and OC-12c ports
- POS OC-3c and OC-12c ports

This chapter includes the following topics:

Topic	Page
Passport 8608GBE Module	21
Passport 8608GTE Module	23
Passport 8608SXE Module	24
Passport 8616SXE Module	27
Passport 8624FXE Module	28
Passport 8632TXE Module	31
Passport 8648TXE Module	33
Passport 8672ATME Module	34
Passport 8683POSE Module	35
Passport 8691SF Module	37

Table 1 lists the maximum port densities available with each type of I/O module.

Table 1 Maximum port densities for Passport 8600 modules

Module type	Port type	Maximum number of ports per chassis		
		8003	8006	8010 and 8010co
8608GBE	1000BASE-SX	16	32	64
	1000BASE-LX	16	32	64
	1000BASE-ZX	16	32	64
	1000BASE-XD	16	32	64
8608GTE	1000BASE-T	16	32	64
8608SXE	1000BASE-SX	16	32	64
8616SXE	1000BASE-SX	32	64	128
8624FXE	100BASE-FX	48	96	192
8632TXE	10BASE-T/100BASE-TX	64	128	256
	1000BASE-SX	4	8	16
	1000BASE-LX	4	8	16
	1000BASE-ZX	4	8	16
	1000BASE-XD	4	8	16
8648TXE	10/100 Mb/s	96	192	384
8672ATME[1]	OC-3c MDA	16	16	16
	OC-12c MDA	4	4	4
8683POSE[2]	OC-3c MDA	12	24	24
	OC-12c MDA	6	12	12

1 For information about these MDAs, see “Passport 8672ATME Module” on page 34.

2 For information about these MDAs, see “Passport 8683POSE Module” on page 35.

Local storage of forwarding data allows the forwarding engine to resolve addresses and to forward packets through the switch fabric without CPU intervention.

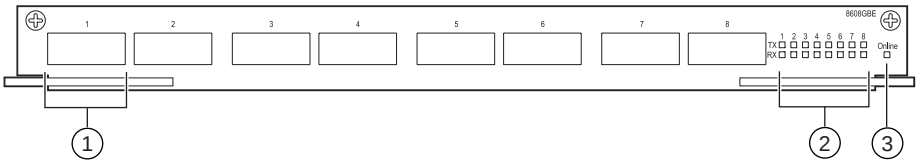
Output buffer memory consists of 4 MB of memory allocated to each Gigabit Ethernet port or shared among eight 10/100 ports.

The front of the module contains the physical layer devices, including the optical transceivers and the MAC controllers.

Passport 8608GBE Module

The Passport 8608GBE Module (Figure 1) provides eight bays for installing gigabit interface converters (GBICs). The fiber ports on the GBICs allow you to make riser connections, server attachments, or interswitch links.

Figure 1 Passport 8608GBE Module



1 = GBIC bay
2 = Port link LEDs
3 = Module Online LED

9717EC

The following types of GBICs are available:

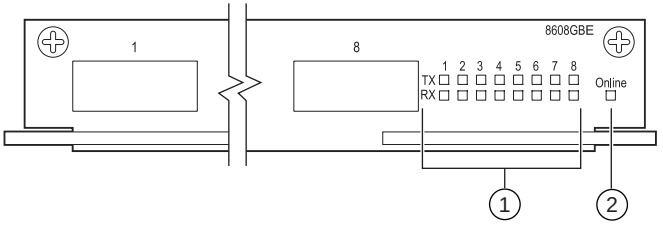
- 1000BASE-SX
- 1000BASE-LX
- 1000BASE-ZX
- 1000BASE-XD

Note: Only GBICs qualified by Nortel Networks are supported for use in the Passport 8608GBE Module. For specific model numbers, refer to the Nortel Networks price list.

For more information about the GBICs and instructions for installing them, see *Installing Gigabit Interface Converters (GBICs)*.

Figure 2 shows the location of the Passport 8608GBE Module LEDs.

Figure 2 Passport 8608GBE Module LEDs



1 = Port TX and RX LEDs
2 = Module Online LED

9718EB

Table 2 describes the Passport 8608GBE Module LEDs.

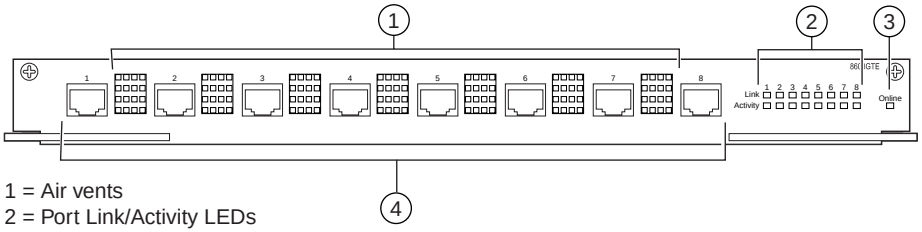
Table 2 Passport 8608GBE Module LEDs

Type	Label	Color/State	Meaning
Port	TX	Green/Blinking	The port is transmitting data.
		Amber/Steady	A fault condition exists on the line or on the attached remote device.
		Off	The port has not detected a fault condition.
	RX	Green/Steady	The port has a link and is enabled.
		Green/Blinking	The port is receiving data.
		Amber/Steady	The port has either no optical signal or no link synchronization.
		Off	The port has signal but no link.
Module	Online	Green/Steady	The module has completed its power-on self-test and software initialization and is operating normally.
		Amber/Steady	The module failed its power-on self-test.
		Off	The switch power is off, or the power has been turned on and the module is going through its power-on self-test and software initialization. A module in this state is not yet functional.

Passport 8608GTE Module

The Passport 8608GTE Module (Figure 3) provides eight 1000BASE-T, copper gigabit ports. Each port operates in 1000 Mb/s full-duplex mode and supports IEEE 802.3u autonegotiation and remote fault identification when the connected device also supports autonegotiation.

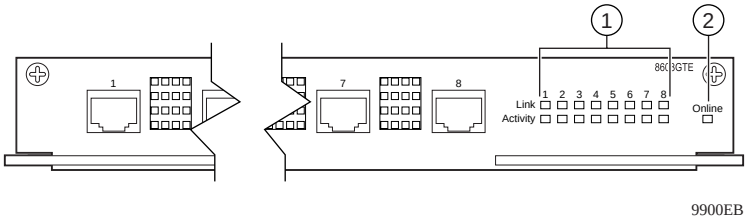
Figure 3 Passport 8608GTE Module



1 = Air vents
2 = Port Link/Activity LEDs
3 = Module Online LED
4 = 100BASE-TX ports

Figure 4 shows the location of the Passport 8608GTE Module LEDs.

Figure 4 Passport 8608GTE Module LEDs



1 = Port Link and Activity LEDs
2 = Module Online LED

Table 3 describes the Passport 8608GTE Module LEDs.

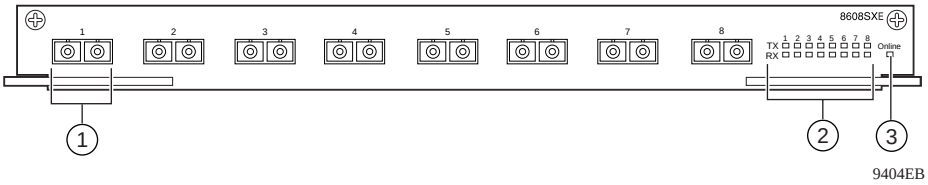
Table 3 Passport 8608GTE Module LEDs

Type	Label	Color/State	Meaning
Port	Link	Green/Steady	The port has established a link and is enabled.
		Amber/Steady	The port is connected, but an error condition is detected.
		Off	The port is disabled or has no link.
	Activity	Green/Blinking	The port is receiving data.
Module	Online	Green/Steady	The module has completed its power-on self-test and software initialization and is operating normally.
		Amber/Steady	The module failed its power-on self-test.
		Amber/Blinking	The module has been inserted into the chassis and diagnostics are running.
		Off	The module power is off, or the power has been turned on, and the module is going through its power-on self-test and software initialization. A module in this state is not yet functional.

Passport 8608SXE Module

The Passport 8608SXE Module (Figure 5) consists of a printed circuit board with eight 1000BASE-SX ports (850 nanometer [nm] shortwave, Gigabit Ethernet) for riser connections, server attachments, or interswitch links.

Figure 5 Passport 8608SXE Module



1 = 1000BASE-SX port
2 = Port TX and RX LEDs
3 = Module Online LED

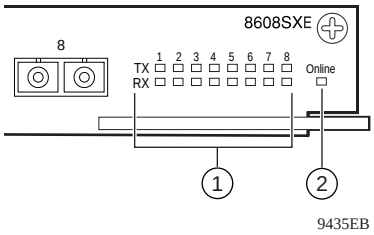
The shortwave optical transceivers provide transmission ranges as follows:

- Up to 260 meters (m) using 62.5 micrometers (µm) multimode fiber cable
- Up to 440 m using 50 µm multimode fiber cable

The Passport 8608SXE Module supports standards-based full-duplex operation only.

Figure 6 shows the location of the Passport 8608SXE Module LEDs.

Figure 6 Passport 8608SXE Module LEDs



1 = Port TX and RX LEDs
2 = Module Online LED

Table 4 describes the Passport 8608SXE Module LEDs.

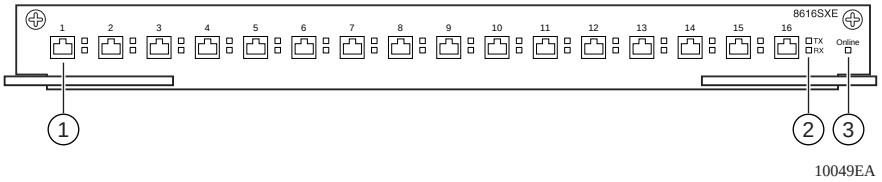
Table 4 Passport 8608SXE Module LEDs

Type	Label	Color/State	Meaning
Port	TX	Green/Blinking	The port is transmitting data.
		Amber/Steady	A fault condition exists on the line or on the attached remote device.
		Off	The port has not detected a fault condition.
	RX	Green/Steady	The port has established a link and is enabled.
		Green/Blinking	The port is receiving data.
		Amber/Steady	The port has either no optical signal or no link synchronization.
		Off	The port has signal but no link.
Module	Online	Green/Steady	The module has completed its power-on self-test and software initialization and is operating normally.
		Amber/Steady	The module failed its power-on self-test.
		Off	The switch power is off, or the power has been turned on and the module is going through its power-on self-test and software initialization. A module in this state is not yet functional.

Passport 8616SXE Module

The Passport 8616SXE Module (Figure 7) provides 16 1000BASE-SX ports (850 nm, shortwave, Gigabit Ethernet) for riser connections, server attachments, or interswitch links.

Figure 7 Passport 8616SXE Module



1 = 1000BASE-SX port
2 = Port TX and RX LEDs
3 = Module Online LED

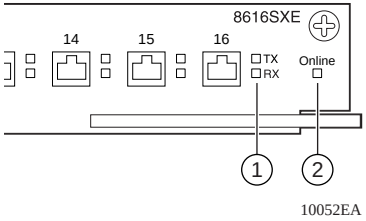
The shortwave optical transceivers provide transmission ranges as follows:

- Up to 275 m using 62.5 µm multimode fiber cable
- Up to 550 m using 50 µm multimode fiber cable

The Passport Module 8616SXE supports standards-based 1000 Mb/s full-duplex operation only.

Figure 8 shows the location of the Passport 8616SXE Module LEDs.

Figure 8 Passport 8616SXE Module LEDs



1 = Port TX and RX LEDs
2 = Module Online LED

Table 5 describes the Passport 8616SXE Module LEDs.

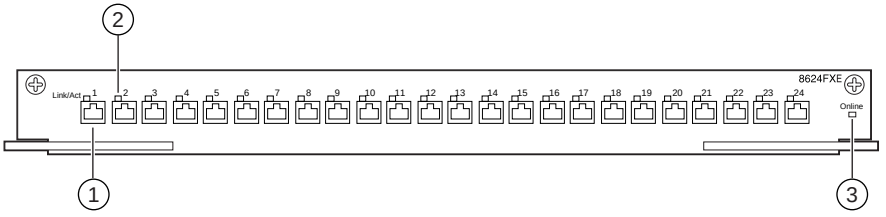
Table 5 Passport 8616SXE Module LEDs

Type	Label	Color/State	Meaning
Port	TX	Green/Blinking	The port is transferring data.
		Off	There is no port activity.
	RX	Green/Steady	The port has established a link and is enabled.
		Green/Blinking	The port is receiving data.
		Amber/Steady	The port has either no optical signal or no link synchronization.
		Off	The port has a signal but no link.
Module	Online	Green/Steady	The module has completed its power-on self-test and software initialization and is operating normally.
		Amber/Steady	The module failed its power-on self-test.
		Off	The switch power is off, or the power has been turned on and the module is going through its power-on self-test and software initialization. A module in this state is not yet functional.

Passport 8624FXE Module

The Passport 8624FXE Module (Figure 9) uses fiber optic technology to allow long-distance connections for backbone and riser applications. The module consists of a printed circuit board with status LEDs and 24 100BASE-FX ports.

Figure 9 Passport 8624FXE Module



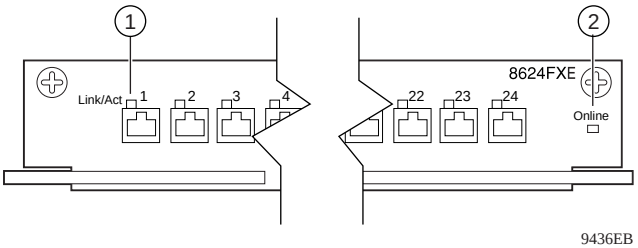
1 = 100BASE-FX port
2 = Port LED
3 = Module Online LED

The 24 100BASE-FX ports on the Passport 8624FXE Module can operate in full-duplex or half-duplex mode.

- In full-duplex mode, the optical transceivers provide transmission ranges of up to 6562 ft (2 km) using 62.5 µm multimode fiber cable.
- In half-duplex mode, the optical transceivers provide transmission ranges of up to 1352 ft (412 m) using 62.5 µm multimode fiber cable.

Figure 10 shows the location of the LEDs.

Figure 10 Passport 8624FXE Module LEDs



1 = Port Link/Activity LEDs

2 = Module Online LED

Table 6 describes the Passport 8624FXE Module LEDs.

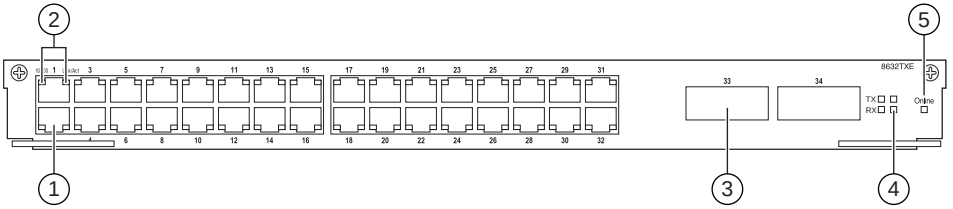
Table 6 Passport 8624FXE Module LEDs

Type	Label	Color/State	Meaning
Port	Link/Act	Green/Steady	The port is connected, and the link is good.
		Green/Blinking	Data is passing through this port.
		Amber/Steady	A fault condition exists at the far end of the connection.
		Amber/Blinking	A fault condition exists at the far end of the connection, and the port is sending or receiving.
		Off	The port is not connected, or it is connected but has no link.
Module	Online	Green/Steady	The module has completed its power-on self-test and software initialization and is operating normally.
		Amber/Steady	The module failed its power-on self-test.
		Off	The switch power is off, or the power has been turned on and the module is going through its power-on self-test and software initialization. A module in this state is not yet functional.

Passport 8632TXE Module

The Passport 8632TXE Module (Figure 11) consists of a printed circuit board with status LEDs, 32 autonegotiating 10/100 Mb/s ports, and two bays for 1000BASE-X gigabit interface connectors (GBICs).

Figure 11 Passport 8632TXE Module



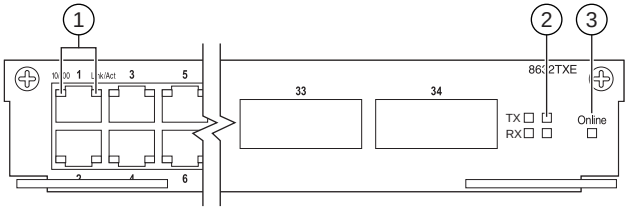
1 = 10/100 Mb/s port
2 = Port LEDs: 10/100 (speed), link/activity
3 = GBIC bay
4 = GBIC TX and RX LEDs
5 = Module online LED

10458EA

The Passport 8632TXE Module ports support the IEEE 802.3u autonegotiation standard. Each port can operate in full- or half-duplex mode. When a port is connected to another device that also supports the IEEE 802.3u autonegotiation standard, the two devices negotiate the highest possible data rate and the duplex mode of operation.

Figure 12 shows the location of the Passport 8632TXE Module LEDs.

Figure 12 Passport 8632TXE Module LEDs



1 = Port LEDs: 10/100 (speed), link/activity
2 = GBIC TX and RX LEDs
3 = Module online LED

10459EA

Table 7 describes the Passport 8632TXE Module LEDs.

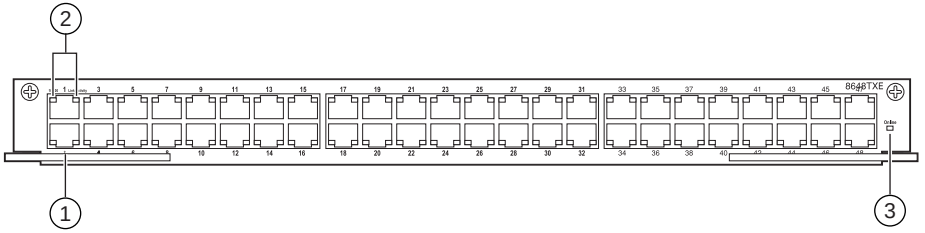
Table 7 Passport 8632TXE Module LEDs

Type	Label	Color/State	Meaning
Module	Online	Green/Steady	The module has completed its power-on self-test and software initialization and is operating normally.
		Amber/Steady	The module failed its power-on self-test.
		Off	The switch power is off, or the power has been turned on and the module is performing its power-on self-test and software initialization. A module in this state is not yet functional.
Port	10/100	Green/Steady	The port is operating at 100 Mb/s.
		Off	The port is operating at 10 Mb/s.
	Link/Act	Green/Steady	The port is connected, and the link is good.
		Green/Blinking	Data is passing through this port.
		Off	The port is disabled or has no link.
GBIC	TX	Green/Blinking	The port is transmitting data.
		Amber/Steady	A fault condition exists on the line or on the attached remote device.
		Off	The port has not detected a fault condition.
	RX	Green/Steady	The port has a link and is enabled.
		Green/Blinking	The port is receiving data.
		Amber/Steady	The port has either no optical signal or no link synchronization.
		Off	The port has a signal but no link.

Passport 8648TXE Module

The Passport 8648TXE Module (Figure 13) consists of a printed circuit board with status LEDs and 48 autonegotiating 10/100 Mb/s ports.

Figure 13 Passport 8648TXE Module



1 = 10/100BASE-T port

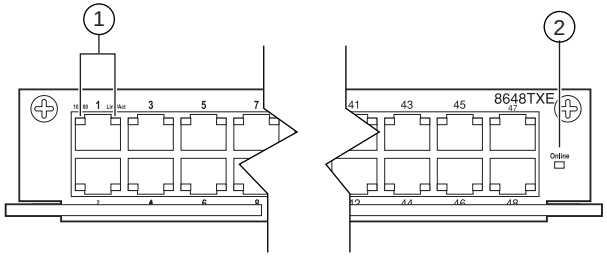
2 = Port LEDs: 10/100 (speed)
Link/Activity

3 = Module Online LED

The Passport 8648TXE Module ports support the IEEE 802.3u autonegotiation standard. Each port can operate in full- or half-duplex mode. When a port is connected to another device that also supports the IEEE 802.3u autonegotiation standard, the two devices negotiate the highest possible data rate and the duplex mode of operation.

Figure 14 shows the location of the Passport 8648TXE Module LEDs.

Figure 14 Passport 8648TXE Module LEDs



1 = Port LEDs: 10/100 (speed) and Link/Activity

2 = Module Online LED

Table 8 describes the Passport 8648TXE Module LEDs.

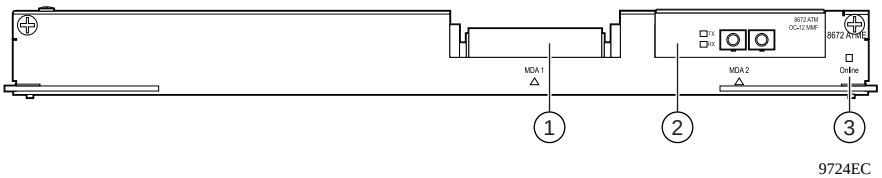
Table 8 Passport 8648TXE Module LEDs

Type	Label	Color/State	Meaning
Port	10/100	Green/Steady	The port is operating at 100 Mb/s.
		Off	The port is operating at 10 Mb/s.
	Link/Activity	Green/Steady	The port is connected, and the link is good.
		Green/Blinking	Data is passing through the port.
		Off	The port is disabled or has no link.
Module	Online	Green/Steady	The module has completed its power-on self-test and software initialization and is operating normally.
		Amber/Steady	The module failed its power-on self-test.
		Off	The switch power is off, or the power has been turned on and the module is going through its power-on self-test and software initialization. A module in this state is not yet functional.

Passport 8672ATME Module

The Passport 8672ATME Module (Figure 15) has two bays for installing ATM MDAs. These MDAs provide network transmission that supports RFC 1483 routed and bridged PVCs. The Passport 8672ATME Module supports SONET and SDH frame structures for data.

Figure 15 Passport 8672ATME Module with an OC-12c MDA



1 = MDA bay
2 = Installed MDA
3 = Online LED

The module requires at least one of the following MDAs:

- 1-port OC-12c: single-mode fiber (SMF) or multimode fiber (MMF) using the Synchronous Optical Network (SONET) or Synchronous Digital Hierarchy (SDH) media
- 4-port OC-3c: SMF or MMF using SONET or SDH media

For more information about the MDAs for the Passport 8672ATME Module, see *Installing Media Dependent Adapters for the Passport 8672ATME Module*.

In the data center, the Passport 8672ATME Module acts as an edge device for WAN connectivity to connect a Passport 8600 Switch to public or private ATM networks. In the wiring closet, this module provides inter-building connections for campus networks where each building is supported by frame-switched networks. You can install one or two Passport 8672ATME Modules in one Passport 8000 Series chassis.

The Passport 8672ATME Module has an Online LED that indicates overall status for the module. Table 9 describes the Online LED.

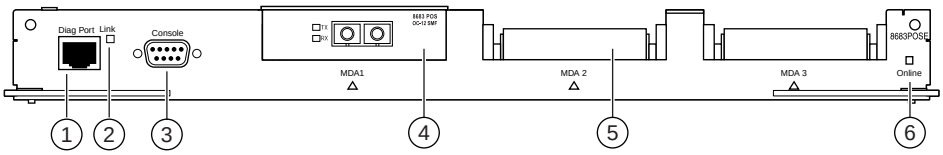
Table 9 Passport 8672ATME Module LED

Color/State	Meaning
Green	The module is receiving power and is ready to receive and transmit traffic.
Amber	The module is initializing and performing diagnostic self-tests.
Off	The module is offline and not receiving power.

Passport 8683POSE Module

The Passport 8683POSE Module (Figure 16) has three bays for installing POS MDAs. These MDAs provide WAN support by allowing access to SONET services in the metropolitan area. You can connect multiple campuses in a single metropolitan area without compromising performance or increasing complexity.

Figure 16 Passport 8683POSE Module with an OC-12c MDA



1 = Diag port
2 = Link LED
3 = Console port
4 = Installed MDA
5 = MDA bay
6 = Online LED

10352EB

To operate, each module requires at least one of the following MDAs:

- 1-port OC-12c: SMF or MMF using SONET media
- 2-port OC-3c: SMF or MMF using SONET media

The Passport 8683POSE Module supports a mixture of OC-3c and OC-12c lines. For example, you can install an OC-12c MDA in the first bay and OC-3c MDAs in the two remaining bays. This module supports up to six I/O OC-3c lines and up to three I/O OC-12c lines.

For more information about the MDAs for the Passport 8683POSE Module, see *Installing Media Dependent Adapters for the Passport 8683POSE Module.*

The Passport 8683POSE Module has an Online LED that indicates overall status for the module. Table 10 describes the Online LED.

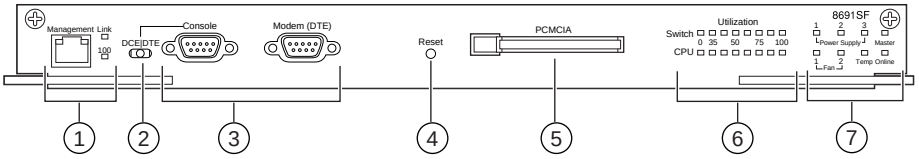
Table 10 Passport 8683POSE Module LED

Color/State	Meaning
Green	The module is receiving power and is ready to receive and transmit traffic.
Amber	The module is initializing and performing diagnostic self-tests.
Off	The module is offline and is not receiving power.

Passport 8691SF Module

The Passport 8691SF Module (Figure 17) provides the core switching fabric for the Passport 8600 Switch, as well as a a CPU subsystem and a real-time clock. The core switching fabric switches all traffic through the Passport 8600 modules. The CPU subsystem manages the routing switch fabric and the other I/O modules.

Figure 17 Passport 8691SF Module



1 = Management port and LEDs
2 = DCE/DTE switch
3 = Console and Modem ports
4 = Reset button
5 = PCMCIA card slot
6 = Utilization LEDs
7 = Module status LEDs

10354EA

The Passport 8691SF Module consists of a printed circuit board with status LEDs, a management port, a DCE/DTE switch for the console port, a console port, a modem port, a reset button, and a PCMCIA card slot.

The CPU subsystem uses a PowerPC CPU and has 64 megabytes (MB) of synchronous dynamic random access memory (SDRAM). The Passport 8691SF Module contains 16 MB of onboard flash memory, used to store the image file, and 2 MB of boot memory (ROM).

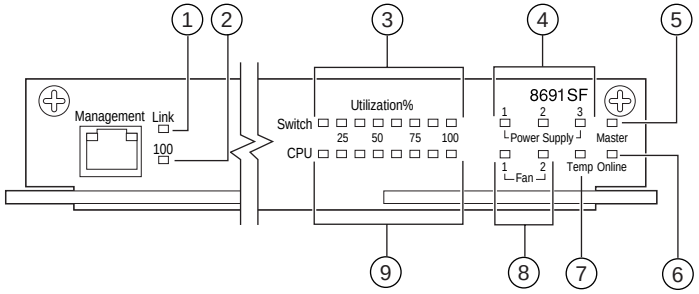
The routing switch fabric uses 10 MB of shared, high-speed memory. This memory buffers traffic destined for I/O modules. The switch logic allocates memory to the various switch priority queues according to traffic usage and current switch configuration.

In all Passport 8000 Series chassis other than the Passport 8003 Chassis, you can install a Passport 8691SF Module in both slots 5 and 6 of the chassis to enable redundant operation. The redundant module in slot 6 can then assume the processing duties of a failing primary Passport 8691SF Module in slot 5. When the Passport 8691SF Module in slot 6 completes initialization, it relearns the routing and VLAN bridging information for the switch.

The two Passport 8691SF Modules share switch fabric functions for the switch. If one Passport 8691SF Module fails, the system reverts to operation with a single Passport 8691SF Module.

Figure 18 shows the location of the Passport 8691SF Module LEDs.

Figure 18 Passport 8691SF Module LEDs



1 = Link LED
2 = Port speed LED
3 = Switch Utilization LEDs
4 = Power supply status LEDs
5 = Master LED
6 = Online LED
7 = Temp LED
8 = Fan LEDs
9 = CPU Utilization LEDs

10350EA

The Switch LEDs and the CPU LEDs serve as a bar graph to indicate card activity. The Switch bar graph increases as the switch fabric utilization increases. The CPU bar graph increases when the CPU is actively performing tasks, such as learning media access control (MAC) addresses, updating routing tables, or interacting with the device management station.

Table 11 describes the Passport 8691SF Module LEDs.

Table 11 Passport 8691SF Module LEDs

Label	Color/State	Meaning
Link	Green/Steady	The management port is connected, and the link is good.
	Off	There is no link to the management port.
100	Green/Steady	The management port is operating at 100 Mb/s.
	Off	The management port is operating at 10 Mb/s.
Switch Utilization (8 LEDs)	Green	The number of lit LEDs indicates the utilization level of the switch fabric as follows: 1 LED = 10 Mb/s 2 LEDs = 100 Mb/s 3 LEDs = 1 Gb/s 4 LEDs = 5 Gb/s 5 LEDs = 10 Gb/s 6 LEDs = 20 Gb/s 7 LEDs = 40 Gb/s 8 LEDs = 64 Gb/s
CPU Utilization (8 LEDs)	Green	The number of lit LEDs indicates the level of CPU activity as follows: 1 LED = 12% 2 LEDs = 24% 3 LEDs = 36% 4 LEDs = 48% 5 LEDs = 60% 6 LEDs = 72% 7 LEDs = 84% 8 LEDs = 100%
Power Supply 1, 2, 3	Green/Steady	The specified power supply is operating normally.
	Amber/Steady	The specified power supply has a fault.
	Off	A power supply is not present in the specified bay, or the power supply in the specified bay is not turned on.
Fan 1, 2	Green/Steady	The specified fan is operating normally.
	Amber/Steady	The specified fan has failed.
Temp	Green/Steady	The temperature is normal for switch operation.
	Amber/Steady	The maximum operating temperature has been exceeded.
Master	Green/Steady	The CPU subsystem on the module is performing diagnostics.
	Green/Blinking	This module is providing active CPU functions for the switch and is the master CPU module.
	Amber/Steady	The CPU subsystem is in a fault state.
	Off	The CPU subsystem on the module is up and is in standby mode.

Table 11 Passport 8691SF Module LEDs (continued)

Label	Color/State	Meaning
Online	Green/Steady	The switch fabric portion of the module is online and is load-sharing.
	Amber/Steady	The switch fabric portion of the module has failed diagnostics.
	Off	The switch fabric portion of the module is off-line.

Ethernet management port

The Ethernet management port on the Passport 8691SF Module is an MDI 10/100BASE-T port that allows out-of-band management of the switch using a Web browser or Device Manager. You can also establish a Telnet session to access the CLI. Use this port to connect the switch to a network management station. The Ethernet management port has its own IP address but does not switch traffic to other ports in the chassis.

Note: This port should be used only as a management port. This port provides out-of-band management for the Passport 8691SF Module.

DCE/DTE switch

The DCE/DTE switch changes the pin assignments on the Console port and allows you to designate the connector as either DTE or DCE. For information about pin assignments for the Console port, see “Console serial port” on page 75.

Serial ports

The Passport Module 8691SF provides two serial ports for attaching modem and console devices. The Console port provides terminal access to the Passport 8691SF Module to use the CLI. The Modem port allows you to connect a standard modem for out-of-band, dial-up management. For information about pin assignments for these ports, see “Console serial port” on page 75 and “Modem serial port” on page 76.

Reset button

The recessed Reset button on the module allows you to perform a hard reset or reboot of the system.

PCMCIA card slot

The PCMCIA card slot in the Passport 8691SF Module accepts an ATA-type, SanDisk*-compatible flash memory card. This memory card provides a convenient way to store switch configurations and boot images. Using a memory card, you can quickly transfer configurations and images between switches or store multiple configurations for a single switch.

Supported memory cards for the Passport 8691SF Module include the following:

- Modem cards that are compatible with Intel* 8250 or National 16552 serial ports
- LAN cards from 3Com* 589, 562, or 556 equipment.

Caution: You cannot use the Passport 1200 PCMCIA card in Passport 8000 Series equipment.

Chapter 2
Installing Passport 8600 modules and connecting equipment

This chapter provides instructions for installing and connecting Passport 8600 modules in a Passport 8000 Series chassis to create a Passport 8600 Switch. This chapter includes the following topics:

Topic	Page
Removing and installing a filler panel	43
Installing and replacing a module	45
Connecting a PC or terminal to the switch	54
Connecting a modem to the switch	55
Connecting a network management station to the switch	56
Connecting communications cables to Passport 8600 modules	57

Removing and installing a filler panel

Nortel Networks ships the Passport 8000 Series chassis with a filler panel covering each empty module slot.

Note: On a Passport 8003, 8006, or 8010 Chassis, the filler panel covers an empty module slot. On the Passport 8010co Chassis, the filler panel resembles a module and is installed in the empty module slot.

Before you can install a new module, you must remove the appropriate filler panel. For instructions, see the next section, "Removing a filler panel."

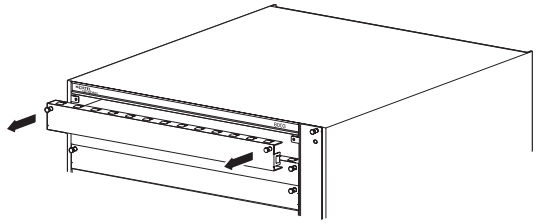
If you need to install a filler panel, see "Installing a filler panel" on page 45.

Removing a filler panel

To remove a filler panel:

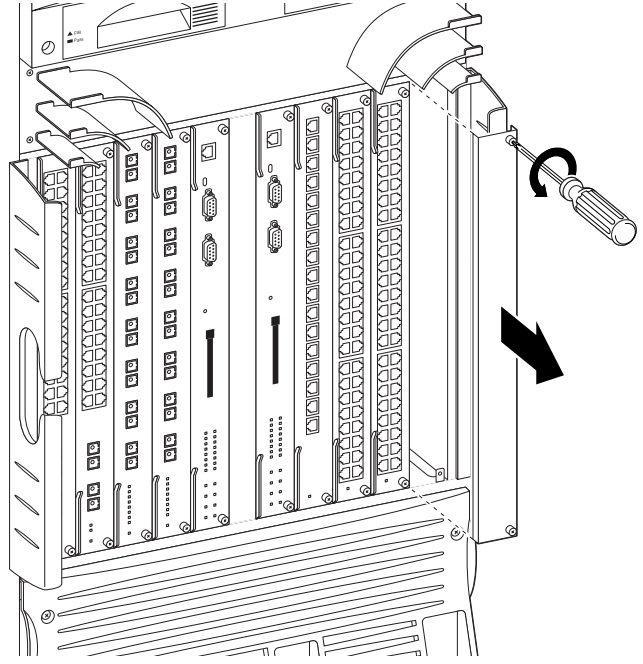
1. Using a Phillips screwdriver, loosen the 2 captive screws that fasten the filler panel to the chassis (Figure 19 or Figure 20).

Figure 19 Removing a filler panel: Passport 8003, 8006, and 8010 Chassis



10249FA

Figure 20 Removing a filler panel: Passport 8010co Chassis



10227FA

2. Pull the filler panel away from the slot.

Installing a filler panel

If you plan to remove a module from the chassis without immediately replacing it, you must install a filler panel in the slot.

To install a filler panel:

1. Locate the slot where you want to install the filler panel.
2. Insert the filler panel into the slot (Passport 8010co Chassis), or place the filler panel over the slot (Passport 8003, 8006, or 8010 Chassis).
3. Tighten the 2 screws with a Phillips screwdriver.

Installing and replacing a module

The Passport 8600 modules are sensitive to static electricity. Static discharge from your clothing or other fixtures around you, even at levels that do not create a spark, can cause damage.

To prevent static discharge damage when you work with Passport 8600 modules, place each module on a grounded antistatic mat until you are ready to install it. If you do not have an antistatic mat, wear a discharge leash or wrist strap to free yourself of static before you touch a module. (An antistatic wrist strap is shipped with the Passport 8010co Chassis.) You can also free yourself of static by touching the metal chassis before you handle the module.

Caution: Electrostatic discharge can damage hardware. Follow the procedures in this section to protect your equipment from damage.

You can add or replace a module with the power on or off.

To replace a module, see the next section, “Removing a module.” To install a module, see “Installing a module” on page 50.

Removing a module

You can remove any Passport 8600 module from an operating switch chassis without turning off the chassis power.

Caution: Before you remove a Passport 8691SF Module, back up your configuration. If the chassis has only one Passport 8691SF Module and you remove that module, the switch will not operate.

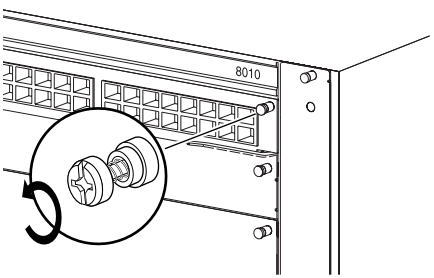
To remove a module:

1 Disconnect any cables attached to the ports on the module.

Caution: Do not operate the Passport 8600 Switch with an empty module slot. If you need to replace a failed module and you do not yet have a replacement module, leave the failed module installed or install a filler panel.

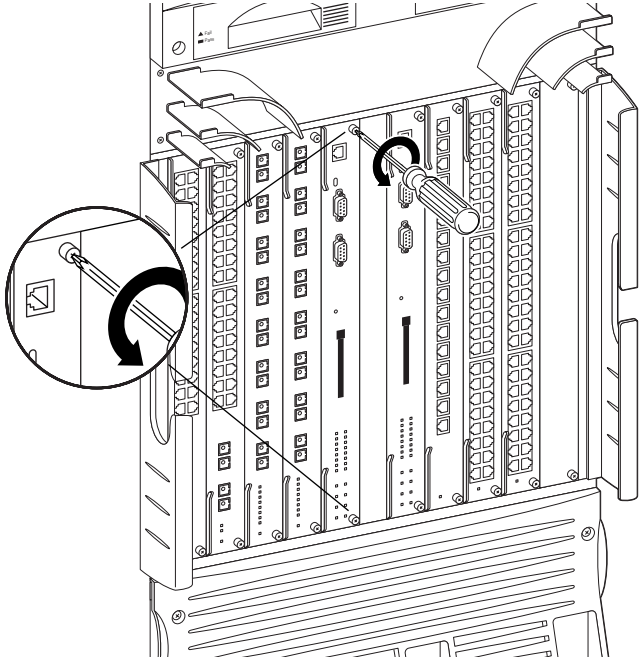
2 Using a Phillips screwdriver, loosen the 2 captive screws that secure the module to the chassis (Figure 21 or Figure 22).

Figure 21 Loosening screws on the module: Passport 8003, 8006, and 8010 Chassis



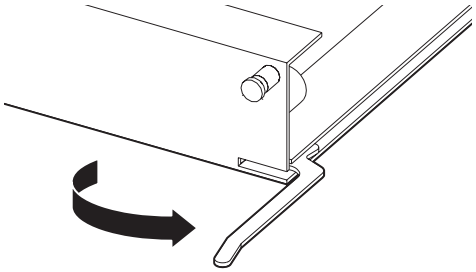
10355FA

Figure 22 Loosening screws on the module: Passport 8010co Chassis



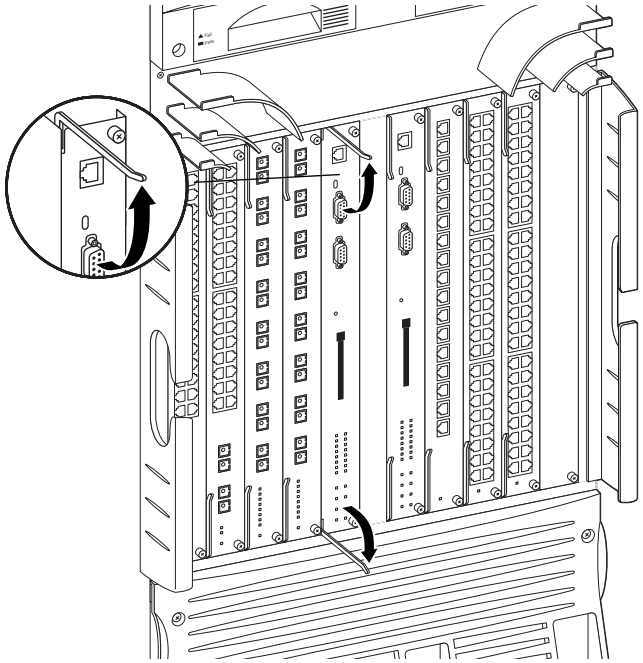
3 Rotate the insert/extract levers to eject the module from the chassis (Figure 23 or Figure 24).

Figure 23 Ejecting the module from the chassis: Passport 8003, 8006, and 8010 Chassis



9397FA

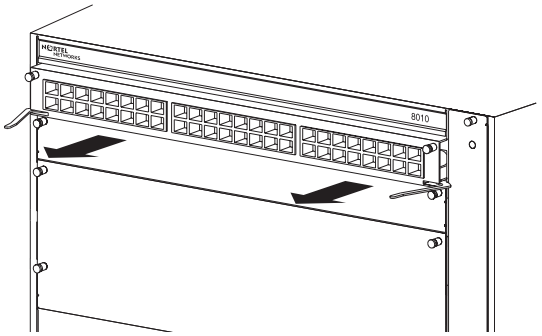
Figure 24 Ejecting the module from the chassis: Passport 8010co Chassis



10228FA

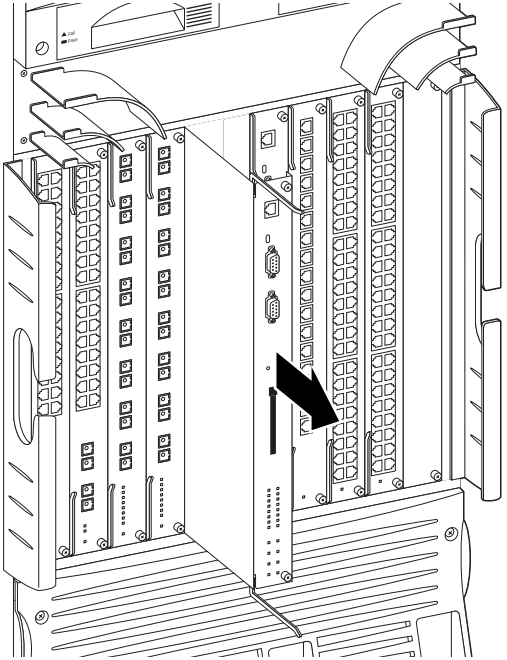
4 Slide the module out of the chassis (Figure 25 or Figure 26).

Figure 25 Removing a module: Passport 8003, 8006, and 8010 Chassis



10356FA

Figure 26 Removing a module: Passport 8010co Chassis



10229FA

5 If you are installing a replacement module, go to the next section. Otherwise, install a filler panel (see "Installing a filler panel" on page 45).

Installing a module

You can install a Passport 8600 module with the power on or off. If you install a module in the same chassis slot where the same type of module was previously installed, the previous configuration is maintained for that module in that slot. In all other cases, a module installed in a Passport 8000 Series chassis is reset to factory defaults.

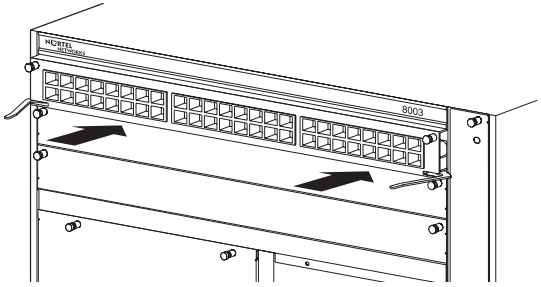
Caution: Electrostatic discharge can damage hardware. Review the antistatic precautions on page 45.

To install a Passport 8600 module:

1. Locate the slot where you want to install the module.
2. Remove the installed module or the filler panel.

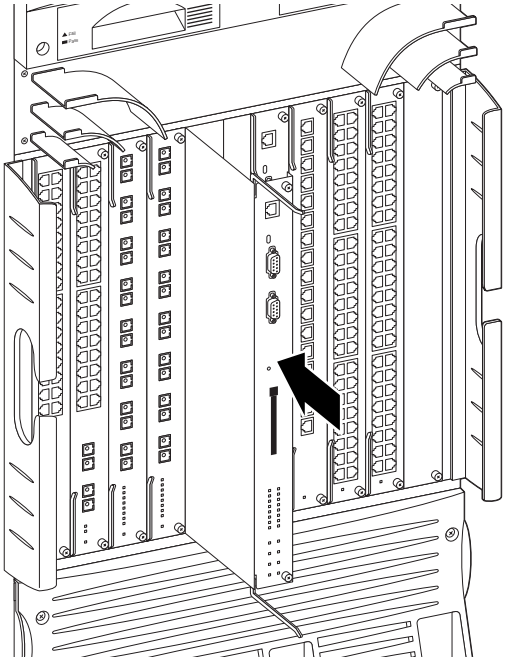
   For instructions, see "Removing a module" on page 46 or "Removing a filler panel" on page 44.
3. Make sure that the insert/extract levers are extended away from the front of the module (see Figure 23 or Figure 24).
4. Slide the module into the slot using the slot module guides (Figure 27 or Figure 28).

Figure 27 Installing a module: Passport 8003, 8006, and 8010 Chassis



10250FA

Figure 28 Installing a module: Passport 8010co Chassis

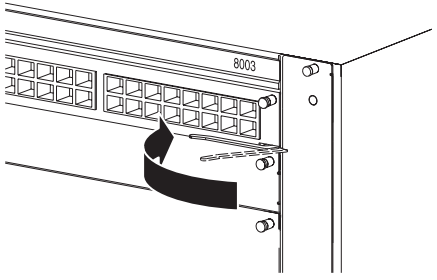


10275FA

5 Slide the module into the chassis until its connector panel touches the chassis back panel.

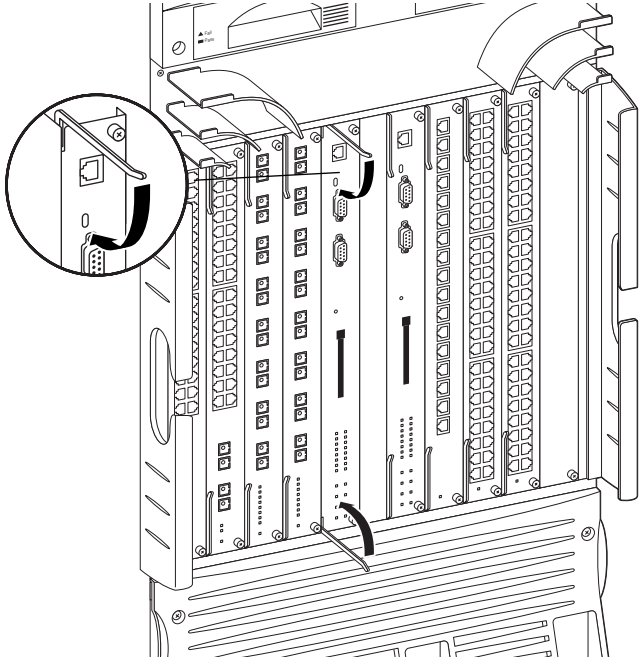
6 Rotate the insert/extract levers to seat the module backplane connectors (Figure 29 or Figure 30).

Figure 29 Seating the backplane connectors: Passport 8003, 8006, and 8010 Chassis



10251FA

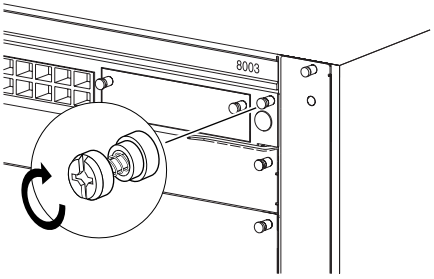
Figure 30 Seating the backplane connectors: Passport 8010co Chassis



7 Using a Phillips screwdriver, tighten the 2 captive screws to secure the module to the chassis (Figure 31 or Figure 32).

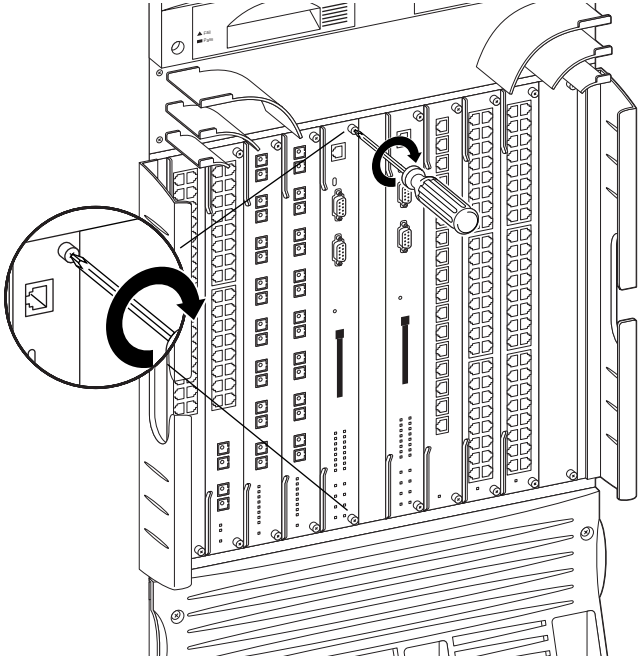
Note: Make sure that both screws are tight for proper module operation.

Figure 31 Securing the module in the chassis: Passport 8003, 8006, and 8010 Chassis



10252FA

Figure 32 Securing the module in the chassis: Passport 8010co Chassis



10277FA

After you install the modules, you can connect console equipment and network cables. For instructions, see these sections:

- "Connecting a PC or terminal to the switch" on page 54
- "Connecting a modem to the switch" on page 55
- "Connecting communications cables to Passport 8600 modules" on page 57

Connecting a PC or terminal to the switch

You use Device Manager or the command line interface (CLI) to customize your Passport 8600 Switch configuration (for example, by editing IP parameters). To establish a local CLI or Device Manager session, you must connect a PC or a VT-100 terminal to the console port on the Passport 8691SF Module.

To connect a PC or terminal to the console port, you need a serial console cable with a 9-pin receptacle connector.

To connect a PC or terminal to the console port:

1. Turn on and configure the terminal or a communications port on the PC, using the parameters in Table 12.

   See the PC or terminal user manual for instructions.

Table 12 PC and terminal parameters

Parameter	Value
Baud rate	9600
Data bits	8
Stop bits	1
Parity	None

2. Insert the 9-pin receptacle end of the console cable into the console connector on the Passport 8691SF Module.
3. Attach the 9-pin plug end of the cable to the serial communications port on the back of the PC or terminal.

Connecting a modem to the switch

If you need remote dial-in access to the CLI, you can connect a modem (AT or Hayes compatible) to the Passport 8691SF Module using a serial cable.

To connect a modem to the Passport 8600 Switch:

1 Turn on and configure the modem, using the parameters in Table 13.

See the modem documentation for instructions.

Table 13 Modem settings

Setting	Value
Clear to send (CTS) signal	On
Data terminal ready (DTR) signal	Modem will only connect if the DTR signal is present. If the DTR signal is not present, the modem will disconnect.
Data carrier detect (DCD) or received line signal detection (RLSD)	On while the carrier is present. The switch uses DCD to detect modem connect and disconnect.
Data set ready (DSR) signal	On
Ready to send (RTS) signal	Ignored
Synchronous/asynchronous mode	Asynchronous
Auto answer	Answer on two rings when DTR is active.
Local character echo	Off
Supervisory functions	Off
Baud rate	9600
Data bits	8
Stop bits	1
Parity	None

2 Insert the 9-pin receptacle end of the serial cable into the modem connector on the Passport 8691SF Module.

3 Insert the 25-pin plug connector at the other end of the serial cable into the modem's RS-232 data communications port.

Connecting a network management station to the switch

The management port on the Passport 8691SF Module is a 10/100 Mb/s Ethernet port implemented on an RJ-45 connector wired as an MDI connection. You can use this port to connect the switch to a network management station for out-of-band management of the switch using a Web browser or Device Manager.

The port has its own IP address but does not switch traffic to other ports in the chassis.

Note: For 10 Mb/s connections, you can use Category 3, 4, or 5 copper unshielded twisted pair (UTP) cable. Use only Category 5 UTP cable to connect ports that will operate at 100 Mb/s.

To connect a UTP cable to the management port:

- Insert the cable into the RJ-45 receptacle connector on the Passport 8691SF Module.

Connecting communications cables to Passport 8600 modules

Gather the communications equipment and cables that you will attach to the Passport 8600 modules. If you do not have the proper cables, contact your network administrator. Table 14 lists the cable requirements for the Passport 8600 modules.

Table 14 Connectors and cables for Passport 8600 modules

Module	Port	Connector	Recommended cable type	Maximum cable length
8608GBE	1000 Mb/s Ethernet port	Duplex SC fiber optic connector	Depends on installed GBIC model; for specifications, see "GBICs" on page 63	
8608GTE	1000BASE-T Ethernet ports	RJ-45	EIA Category 5 or better UTP/STP straight-through cable. Cables must use all four pairs.	328 ft (100 m)
8608SXE	1000BASE-SX Ethernet ports	Duplex SC	62.5 µm multimode fiber optic cable	722 ft (220 m) @ 160 MHz/km bandwidth 902 ft (275 m) @ 200 MHz/km bandwidth
			50 µm multimode fiber optic cable	1640 ft (500 m) @ 400 MHz/km bandwidth 1804 ft (550 m) @ 400 MHz/km bandwidth
8616SXE	1000BASE-SX Ethernet ports	MT-RJ	62.5 µm multimode fiber optic cable	722 ft (220 m) @ 160 MHz/km bandwidth 902 ft (275 m) @ 200 MHz/km bandwidth
			50 µm multimode fiber optic cable	1640 ft (500 m) @ 400 MHz/km bandwidth 1804 ft (550 m) @ 400 MHz/km bandwidth
8624FXE	100BASE-FX Ethernet ports	MT-RJ	62.5 µm multimode fiber optic cable	6562 ft (2 km) for full-duplex links 1352 ft (412 m) for half-duplex links

Table 14 Connectors and cables for Passport 8600 modules (continued)

Module	Port	Connector	Recommended cable type	Maximum cable length
8632TXE	1000 Mb/s Ethernet port	Duplex SC	Depends on installed GBIC model; for specifications, see "GBICs" on page 63	
	10/100 Mb/s Ethernet ports	RJ-45 wired as MDI-X	EIA Category 3, 4, or 5 UTP for 10 Mb/s operation; EIA Category 5 UTP required for 100 Mb/s operation	328 ft (100 m)
8648TXE	10/100 Mb/s Ethernet ports	RJ-45 wired as MDI-X	EIA Category 3, 4, or 5 UTP for 10 Mb/s operation; EIA Category 5 UTP required for 100 Mb/s operation	328 ft (100 m)
8672ATME OC-3	OC-3	MT-RJ	9/125 µm single-mode fiber optic cable	9.3 mi (15 km)
	OC-3	MT-RJ	62.5/125 µm multimode fiber optic cable	1.24 mi (2 km)
8672ATME OC-12	OC-12	Duplex SC	9/125-µm single-mode fiber optic cable	9.3 mi (15 km)
	OC-12	Duplex SC	62.5/125 µm multimode fiber optic cable	1640 ft (500 m)
8683POSE OC-3	OC-3	MT-RJ	9/125 µm single-mode fiber optic cable	9.3 mi (15 km)
	OC-3	MT-RJ	62.5/125 µm multimode fiber optic cable	1.24 mi (2 km)
8683POSE OC-12	OC-12	Duplex SC	9/125-µm single-mode fiber optic cable	9.3 mi (15 km)
	OC-12	Duplex SC	62.5/125 µm multimode fiber optic cable	1640 ft (500 m)
8691SF	Ethernet Management port	RJ-45	EIA Category 3, 4, or 5 UTP for 10 Mb/s operation; EIA Category 5 UTP required for 100 Mb/s operation	328 ft (100 m)
	Serial ports	DB-9	RS-232	328 ft (100 m)

Note: Ports on the Passport 8632TXE and 8648TXE Modules are wired as MDI-X. Use straight-through cables to connect these ports to MDI connections such as workstations or servers. Use crossover cables to connect these ports to other MDI-X connections such as hubs or other switches.

Appendix A
Passport 8600 module technical specifications

This appendix provides technical specifications for the Passport 8600 modules. The appendix includes the following information:

Topic	Page
General specifications	60
Passport 8608GBE Module	62
Passport 8608GTE Module	65
Passport 8608SXE Module	67
Passport 8616SXE Module	68
Passport 8624FXE Module	69
Passport 8632TXE Module	70
Passport 8648TXE Module	71
Passport 8672ATME Module	72
Passport 8683POSE Module	73
Passport 8691SF Module	74

General specifications

Standards supported

IEEE Std 802.3, 1998 Clause 4 Media Access Control CSMA/CD
IEEE Std 802.3, 1998 Clause 14 10Base T New
IEEE Std 802.3, 1998 Clause 21 100Base T
ANSI/IEEE Std 802.3, 1998 Media Access Control (MAC) Bridges
IEEE 802.1Q Virtual Bridged Local Area Networks
IEEE Std 802.3, 1998 Clause 34-42
IEEE 802.3, 1998 Clause 31 (MAC Control)

Data rate and encoding

10 Mb/s Manchester encoding
100 Mb/s 4B/5B encoding
1000 Mb/s 8B/10B encoding

Environmental specifications

Operating temperature:	5°C to 40°C (41°F to 104°F)
Storage temperature:	–25°C to 70°C (–13°F to 158°F)
Operating humidity:	85% maximum relative humidity, noncondensing
Storage humidity:	95% maximum relative humidity, noncondensing
Operating altitude:	3000 m (10,000 ft) maximum
Free fall/drop:	ISO 4180-s, NSTA 1A
Vibration:	IEC 68-2-6/34
Shock/bump:	IEC 68-2-27/29

Performance specifications (64-byte packets)

Aggregate throughput:	100 million pps
Routing and switching forwarding rates:	10 Mb/s: 14,880 pps maximum 100 Mb/s: 148,810 pps maximum 1000 Mb/s: 1,488,100 pps maximum
Latency:	10 microseconds (LIFO)

Gigabit link power budget

1000BASE-SX:	7.5 dB
1000BASE-SX SMF:	8.0 dB

Address database size

Addressing:	48-bit MAC address
Frame length:	64 to 1518 bytes (IEEE 802.1Q Untagged) 64 to 1522 bytes (IEEE 802.1Q Tagged)

Electromagnetic emissions

Meets requirements of:

US:	FCC CFR47 Part 15, Subpart B, Class A
Canada:	ICES-003, Issue-2, Class A
Australia/New Zealand:	AS/NZS 3548:1995, Class A
Japan:	VCCI-V3/97.04, Class A
Taiwan:	CNS 13438, Class A
Europe:	EN 55022-1998 Class A; EN 61000-3-2/A14, EN 61000-3-3
Global:	CISPR 22-1997 Class A CE Mark
Electromagnetic susceptibility:	EN55024:1998/CISPR 24:1997

Safety agency approvals

US:	UL60950
Canada:	CSA 22.2 No. 60950
Australia/New Zealand:	AS/NZS 3260
Mexico:	NOM-019-SCFI-1998

Passport 8608GBE Module

Physical specifications

Height:	1.5 in. (3.8 cm)
Width:	15.4 in. (39.1 cm)
Depth:	18.5 in. (47.0 cm)
Weight:	8.0 lb (3.6 kg)

Electrical specifications

Input power:	65 W maximum
Thermal rating:	224 Btu/hr maximum

MTBF rating	93,284 hr
Connector type	Duplex SC

GBICs

Physical specifications

Height:	12 mm
Width:	30 mm
Depth:	65 mm
Weight:	Varies with GBIC type
Connector type	Duplex SC

1000BASE-SX GBIC

Cable specifications

Type:	62.5 µm or 50 µm multimode fiber
Maximum distance:	1804 ft (550 m)

Optical specifications

Wavelength:	850 nm (VCSEL)
Average transmit output power:	-9.5 to -4 dBm
Average receiver sensitivity:	-17 dBm (minimum)

1000BASE-LX GBIC

Cable specifications

Type:	62.5 µm multimode fiber or 9 µm single-mode fiber **Note:** Multimode fiber may require a DMD patch cord.
Maximum distance:	Single-mode fiber: 32,810 ft (10 km) Multimode fiber: 1804 ft (550 m)

Optical specifications

Wavelength:	1300 nm (FP laser diode)
Average transmit output power:	-5.2 to 0 dBm
Average receiver sensitivity:	-22 dBm (minimum)

1000BASE-XD GBIC

Cable specifications

Type:	9 µm single-mode fiber
Maximum distance:	31 mi (50 km)
	Note: For a shorter link distance, you may need an in-line attenuator to prevent overloading the receiver.

Optical specifications

Wavelength:	1550 nm (DFB laser diode)
Average transmit output power:	-5.2 to 0 dBm
Average receiver sensitivity:	-24 dBm

1000BASE-ZX GBIC

Cable specifications

Type:	9 µm single-mode fiber
Maximum distance:	43 mi (70 km)
	Note: For a shorter link distance, you may need an in-line attenuator to prevent overloading the receiver.

Optical specifications

Wavelength:	1550 nm (DFB laser diode)
Average transmit output power:	0 to 5.2 dBm
Average receiver sensitivity:	-22 dBm (minimum)

Passport 8608GTE Module

Physical specifications

Height:	1.5 in. (3.8 cm)
Width:	15.4 in. (39.1 cm)
Depth:	18.5 in. (47.0 cm)
Weight:	8.0 lb (3.6 kg)

Electrical specifications

Input power:	100 W maximum
Thermal rating:	344 Btu/hr maximum

MTBF rating	109,000 hr
Connector type	RJ-45 (see Table 15)

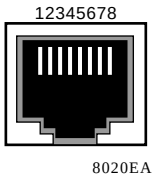
Cable specifications

Type:	Category 5 or better UTP cable for 1000 Mb/s operation. Cables must use all four pairs. Wiring configuration and performance are defined by EIA/TIA Standard 568 and IEEE Standard 802.3 2000 edition.
Maximum distance:	328 ft (100 m)

Port connectors

The ports on the Passport 8608GTE Module are RJ-45 ports wired as shown in Table 15.

Table 15 Pin assignments: Passport 8608GTE Module port

Connector	Pin number	Signal
	1	Bidirectional Data A + (BI_DA+)
	2	Bidirectional Data A – (BI_DA–)
	3	Bidirectional Data B + (BI_DB+)
	4	Bidirectional Data C + (BI_DC+)
	5	Bidirectional Data C – (BI_DC–)
	6	Bidirectional Data B – (BI_DB–)
	7	Bidirectional Data D + (BI_DD+)
	8	Bidirectional Data D – (BI_DD–)

Passport 8608SXE Module

Physical specifications

Height:	1.5 in. (3.8 cm)
Width:	15.4 in. (39.1 cm)
Depth:	18.5 in. (47.0 cm)
Weight:	8.0 lb (3.6 kg)

Electrical specifications

Input power:	65 W maximum
Thermal rating:	224 Btu/hr maximum

MTBF rating	109,000 hr
Connector type	Duplex SC

Cable specifications

Type:	62.5 µm or 50 µm multimode fiber optic cable
Maximum distance:	62.5 µm multimode fiber optic cable: 722 ft (220 m) @ 160 MHz/km bandwidth 902 ft (275 m) @ 200 MHz/km bandwidth 50 µm multimode fiber optic cable: 1640 ft (500 m) @ 400 MHz/km bandwidth 1804 ft (550 m) @ 400 MHz/km bandwidth

Optical specifications

Wavelength:	850 nm
Optical budget:	7 dB
Laser transmitter characteristics:	Minimum launch power: -10 dBm Maximum launch power: -4 dBm
Receiver characteristics:	Minimum receiver sensitivity: -17 dBm Maximum input power: 0 dBm

Passport 8616SXE Module

Physical specifications

Height:	1.5 in. (3.8 cm)
Width:	15.4 in. (39.1 cm)
Depth:	18.5 in. (47.0 cm)
Weight:	8.0 lb (3.6 kg)

Electrical specifications

Input power:	115 W maximum
Thermal rating:	396 Btu/hr maximum

MTBF rating	108,000 hr
Connector type	MT-RJ

Cable specifications

Type:	62.5 µm or 50 µm multimode fiber optic cable
Maximum distance:	62.5 µm multimode fiber optic cable: 722 ft (220 m) @ 160 MHz/km bandwidth 902 ft (275 m) @ 200 MHz/km bandwidth 50 µm multimode fiber optic cable: 1640 ft (500 m) @ 400 MHz/km bandwidth 1804 ft (550 m) @ 400 MHz/km bandwidth

Optical specifications

Wavelength:	850 nm
Optical budget:	7 dB
Laser transmitter characteristics:	Minimum launch power: -10 dBm Maximum launch power: -4 dBm
Receiver characteristics:	Minimum receiver sensitivity: -17 dBm Maximum input power: 0 dBm

Passport 8624FXE Module

Physical specifications

Height:	1.5 in. (3.8 cm)
Width:	15.4 in. (39.1 cm)
Depth:	18.5 in. (47.0 cm)
Weight:	7.6 lb (3.4 kg)

Electrical specifications

Input power:	56 W maximum
Thermal rating:	193 Btu/hr maximum

MTBF rating 132,749 hr

Connector type MT-RJ

Cable specifications

Type:	62.5 µm multimode fiber optic cable
Distance:	1352 ft (412 m) for half-duplex links 6562 ft (2 km) for full-duplex links

Optical specifications

Wavelength:	1300 nm
Optical budget:	-20 dBm to -14 dBm
Transmitter characteristics:	Minimum optical power: -10 dBm Maximum optical power: -4 dBm

Passport 8632TXE Module

Physical specifications

Height:	1.5 in. (3.8 cm)
Width:	15.4 in. (39.1 cm)
Depth:	18.5 in. (47.0 cm)
Weight:	9 lb (4 kg)

Electrical specifications

Input power:	100 W maximum
Thermal rating:	193 Btu/hr maximum

MTBF rating	132,749 hr
Connector type	RJ-45 connector wired as MDI-X SC duplex connectors on GBICs; see GBIC descriptions beginning on page 63.

Cable specifications

Type:	Category 3, 4, or 5 UTP cable (10 Mb/s operation) Category 5 UTP cable (100 Mb/s operation)
Maximum distance:	328 ft (100 m) for 10/100 Mb/s ports For GBIC ports, distance varies with the GBIC; see GBIC descriptions beginning on page 63.

Passport 8648TXE Module

Physical specifications

Height:	1.5 in. (3.8 cm)
Width:	15.4 in. (39.1 cm)
Depth:	18.5 in. (47.0 cm)
Weight:	8.0 lb (3.6 kg)

Electrical specifications

Input power:	76 W maximum
Thermal rating:	261 Btu/hr maximum

MTBF rating 107,411 hr

Connector type RJ-45 connector wired as MDI-X (see Table 16)

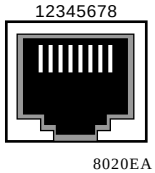
Cable specifications

Type:	Category 3, 4, or 5 UTP cable (10 Mb/s operation) Category 5 UTP cable (100 Mb/s operation)
Maximum distance:	328 ft (100 m)

Port connectors

The ports on the Passport 8648TXE Module are RJ-45 ports wired as MDI-X connectors (Table 16).

Table 16 Pin assignments: Passport 8648TXE Module port

Connector	Pin number	Signal
	1	Input receive data + (RX+)
	2	Input receive data - (RX-)
	3	Output transmit data + (TX+)
	6	Output transmit data - (TX-)
	4, 5, 7, 8	Not used

Passport 8672ATME Module

Physical specifications

Height:	1.5 in. (3.8 cm)
Width:	15.4 in. (39.1 cm)
Depth:	18.5 in. (47.0 cm)
Weight:	8.0 lb (3.6 kg)

Electrical specifications

Input power:	OC-3c MDA: 40 W maximum OC-12c MDA: 40 W maximum
Thermal rating:	OC-3c MDA: 138 Btu/hr maximum OC-12c MDA: 138 Btu/hr maximum
MTBF rating	85,000 hr
Connector type	OC-3c MDA: MT-RJ OC-12c MDA: Duplex SC

Cable specifications

Type:	Multimode or single-mode fiber optic cable
Maximum distance:	Multimode fiber optic cable: 1.24 mi (2 km) for OC-3c connection 1640 ft (500 m) for OC-12c connection Single-mode fiber optic cable: 9.3 mi (15 km) for OC-3c connection 9.3 mi (15 km) for OC-12c connection

Optical specifications

Wavelength:	OC-3c MDA SMF: 1274 to 1356 nm OC-3c MDA MMF: 1274 to 1356 nm OC-12c MDA SMF: 1274 to 1356 nm OC-12c MDA MMF: 1260 to 1360 nm
Average transmit output power:	OC-3c and OC-12c MDAs SMF: -8 to -15 dBm OC-3c and OC-12c MDAs MMF: -14 to -29 dBm
Average receiver sensitivity:	OC-3c MDA SMF: -14 to -28 dBm OC-3c MDA MMF: -14 to -29 dBm OC-12c MDA SMF: -7 to -18 dBm OC-12c MDA MMF: -14 to -28 dBm

Passport 8683POSE Module

Physical specifications

Height:	1.5 in. (3.8 cm)
Width:	15.4 in. (39.1 cm)
Depth:	18.5 in. (47.0 cm)
Weight:	

Electrical specifications

Input power:	OC-3c MDA: 70 W maximum OC-12c MDA: 90 W maximum
Thermal rating:	OC-3c MDA: 241 Btu/hr maximum OC-12c MDA: 310 Btu/hr maximum

MTBF rating	104,000 hr
Connector types	OC-3c MDA: MT-RJ OC-12c MDA: Duplex SC

Cable specifications

Type:	Multimode or single-mode fiber optic cable
Maximum distance:	Multimode fiber optic cable: 1.24 mi (2 km) for OC-3c connection 1640 ft (500 m) for OC-12c connection Single-mode fiber optic cable: 9.3 mi (15 km) for OC-3c connection 9.3 mi (15 km) for OC-12c connection

Optical specifications

Wavelength:	OC-3c MDA SMF: 1274 to 1356 nm OC-3c MDA MMF: 1274 to 1356 nm OC-12c MDA SMF: 1274 to 1356 nm OC-12c MDA MMF: 1260 to 1360 nm
Average transmit output power:	OC-3c and OC-12c MDAs SMF: -8 to -15 dBm OC-3c and OC-12c MDAs MMF: -14 to -29 dBm
Average receiver sensitivity:	OC-3c MDA SMF: -14 to -28 dBm OC-3c MDA MMF: -14 to -29 dBm OC-12c MDA SMF: -7 to -18 dBm OC-12c MDA MMF: -14 to -28 dBm

Passport 8691SF Module

Physical specifications

Height:	1.5 in. (3.8 cm)
Width:	15.4 in. (39.1 cm)
Depth:	18.5 in. (47.0 cm)
Weight:	7.2 lb (3.3 kg)

Electrical specifications

Input power:	70 W maximum
Thermal rating:	241 Btu/hr maximum

MTBF rating 119,047 hr

Connector types

Ethernet Management port:	RJ-45 connector wired as MDI (see Table 17)
Console port:	DB-9 connector (see Table 18)
Modem port:	DB-9 connector (see Table 19)

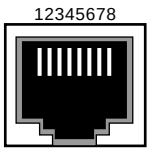
Cable specifications

Ethernet Management port:	Category 3, 4, or 5 UTP cable (10 Mb/s operation) Category 5 UTP cable (100 Mb/s operation)
Console port:	RS-232 cable
Modem port:	DTE-to-DCE cable (straight or transmit cable)

Management port

The Management port is a 10/100 Mb/s Ethernet port implemented on an RJ-45 connector wired as an MDI connection. Table 17 shows the pin assignments for this connector.

Table 17 Pin assignments: Passport 8691SF Module Management port

Connector	Pin number	Signal
	1	Output transmit data + (TX+)
	2	Output transmit data - (TX-)
	3	Input receive data + (RX+)
	6	Input receive data - (RX-)
	4, 5, 7, 8	Not used

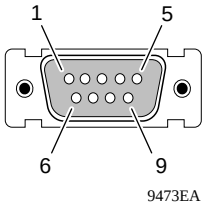
Console serial port

The Console serial port is implemented as a DB-9 connector. This port can operate as a data terminal equipment (DTE) or data communication equipment (DCE) device. Use the switch to the left of the port to set the port to DTE (left) or DCE (right). Default settings for this port are 9600 bits/s, 8 data bits, no parity, and one stop bit.

Because the Console port expects to receive data set ready (DSR) and clear to send (CTS) signals before transmitting, these control lines are required in the cabling. The Console port does not support any inbound flow control; that is, the port does not toggle control lines to indicate an input buffer full condition.

Table 18 lists the pin assignments for the Console port for both the DTE and DCE settings.

Table 18 Pin assignments: Passport 8691SF Module Console port

Connector	Pin number	DCE signal	DTE signal
	2	RXD	TXD
	3	TXD	RXD
	4	DTR	DSR
	5	GND	GND
	6	DSR	DTR
	7	RTS	CTS
	9	CTS	RTS

Modem serial port

The Modem serial port is implemented on a DB-9 connector wired as a DTE connection.

To set up modem access, you need a DTE-to-DCE cable (straight or transmit cable) between the Modem port and a modem or terminal server.

Table 19 describes the required cable pin assignments.

Table 19 Pin assignments: DTE to DCE

Switch		Modem	
Signal	**Pin number**	**DCE DB-9 pin number**	**DCE DB-25 pin number**
RXD	2	2	3
TXD	3	3	2
DTR	4	4	20
GND	5	5	7
DSR	6	6	6
RTS	7	7	4
CTS	8	8	5